

# Verizon Wireless Communications Facility at Presidents Hospital America Bldg #19



NCPC Final Design Submission **DRAFT**

Submitted by the National Naval Medical Center AVP  
October 17, 2014

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# Project Report

## Agency Project Manager

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Bethesda, MD 20889

## Introduction:

Cellco Partnership, d/b/a Verizon Wireless, is licensed by the Federal Communications Commission (FCC) to provide wireless service, including licenses to deploy its network in the Greater Baltimore-Washington, D.C. metropolitan area. The Presidents Hospital campus, Building 19, has been selected as a potential site to help fulfill coverage objectives for the immediate area, as well as on the hospital campus, as part of this network.

## Project Description:

Verizon Wireless proposes to construct and maintain a wireless telecommunications facility on the roof Building 19. The proposed facility will include twelve (12) panel antennas and one (1) GPS antenna on the penthouse structure on the roof, and an equipment cabinets (to be located in a room in the basement).

The proposed panel antennas are to be flush-mounted to the penthouse wall on the west side of the building, at a rad center elevation of 77'. The mounting materials for all panel antennas will be stainless steel. Six (6) of the proposed panel antennas will be approximately 48" x 10.0" x 4.1", and six (6) of the antennas will be approximately 72.0" x 18.8" x 9.1" in size. Antennas will not exceed the height of the wall to which they are mounted, and all panel antennas and mounting materials will be painted to blend with the background in order to minimize visual impact.

The equipment cabinets needed to operate the antennas will be located in a room in the basement of the building. No equipment will be visible outside the building.

The transmitting frequencies of the antennas will be between the 698-896 MHz (cellular) and the 1710-2170 MHz (PCS/LTE) ranges.

A radio frequency emission ("RFE") assessment report, dated October 10, 2014, is enclosed separately with this application, indicating that the proposed facility will comply with RF radiation guidelines adopted by the FCC and safety regulations adopted by OSHA.

## Coverage Objective/Alternatives Considered:

The proposed installation is designed to bring general Verizon Wireless in-vehicle along Wisconsin Avenue (Rockville Pike) as well as in-building service for Hospital campus. There are no other viable buildings or structures such as existing towers, on which these antennas could be placed.

## Existing Antennas Installations:

There are no existing wireless telecommunication antennas on the subject building. Verizon Wireless does have an existing, interior "in-building" system in Building 19.

## Project Budget:

No government funds are being utilized for the installation of the proposed antennas.

## Project Schedule:

Construction commence: Spring 2015

Construction completion: Summer 2015

## Historic Preservation:

The Naval Medical Center, in coordination with Verizon Wireless, is initiating this review required under Section 106 of the National Historic Preservation Act of 1996, and Verizon Wireless will assist as required.

## Building Codes and Operational Maintenance:

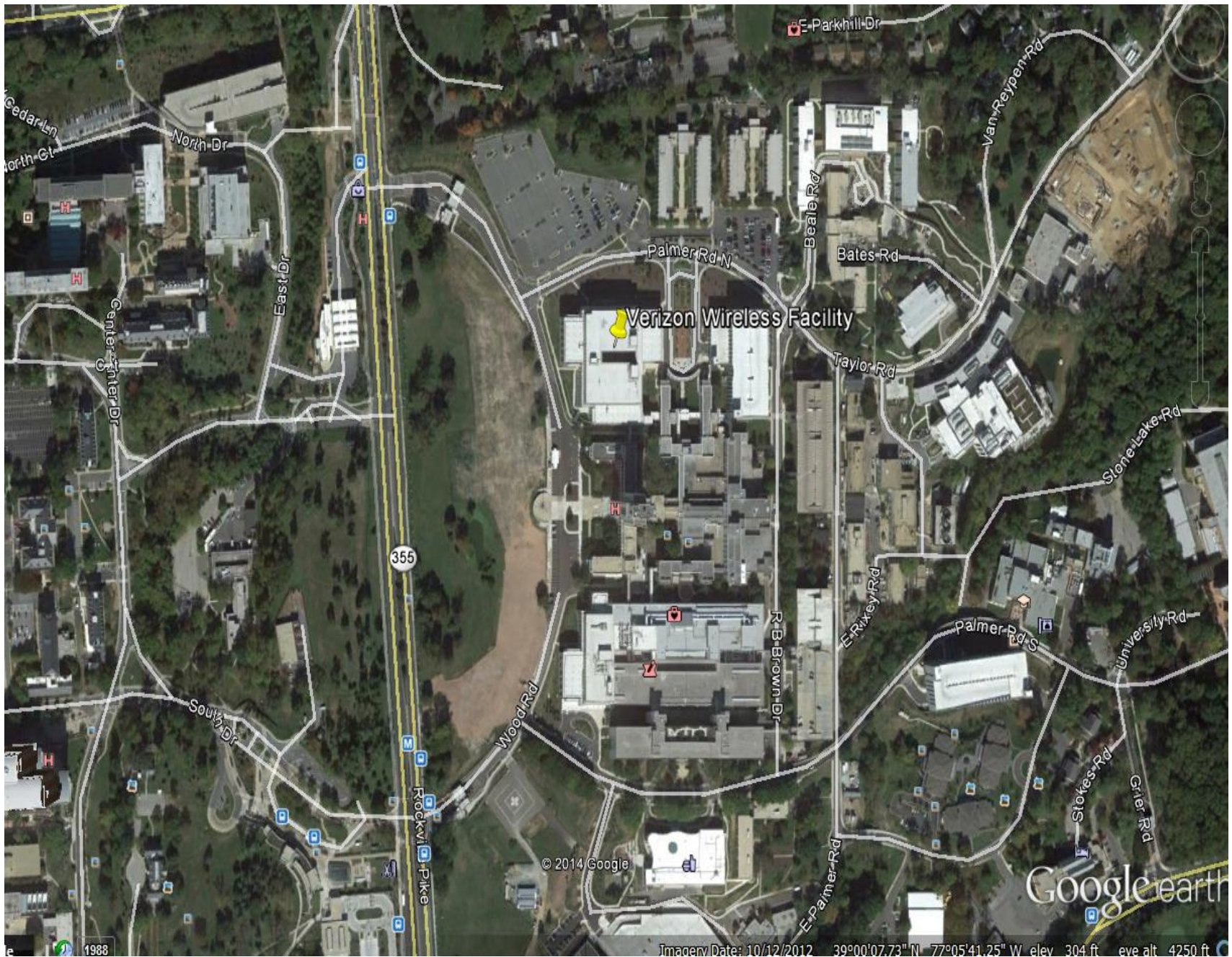
Installation of the proposed antennas will be done in compliance with the International Building Code 2012. Verizon Wireless will conduct regular periodic inspections of the site to ensure its continued, safe operation. The roof is a secured area and is not accessible by the general public.

## Conclusion:

Verizon Wireless has worked very closely with the Naval Medical Center representatives to design the telecommunications facility to pose minimal impact on the subject building and the surrounding area.

# EXHIBITS





# Neighborhood Description

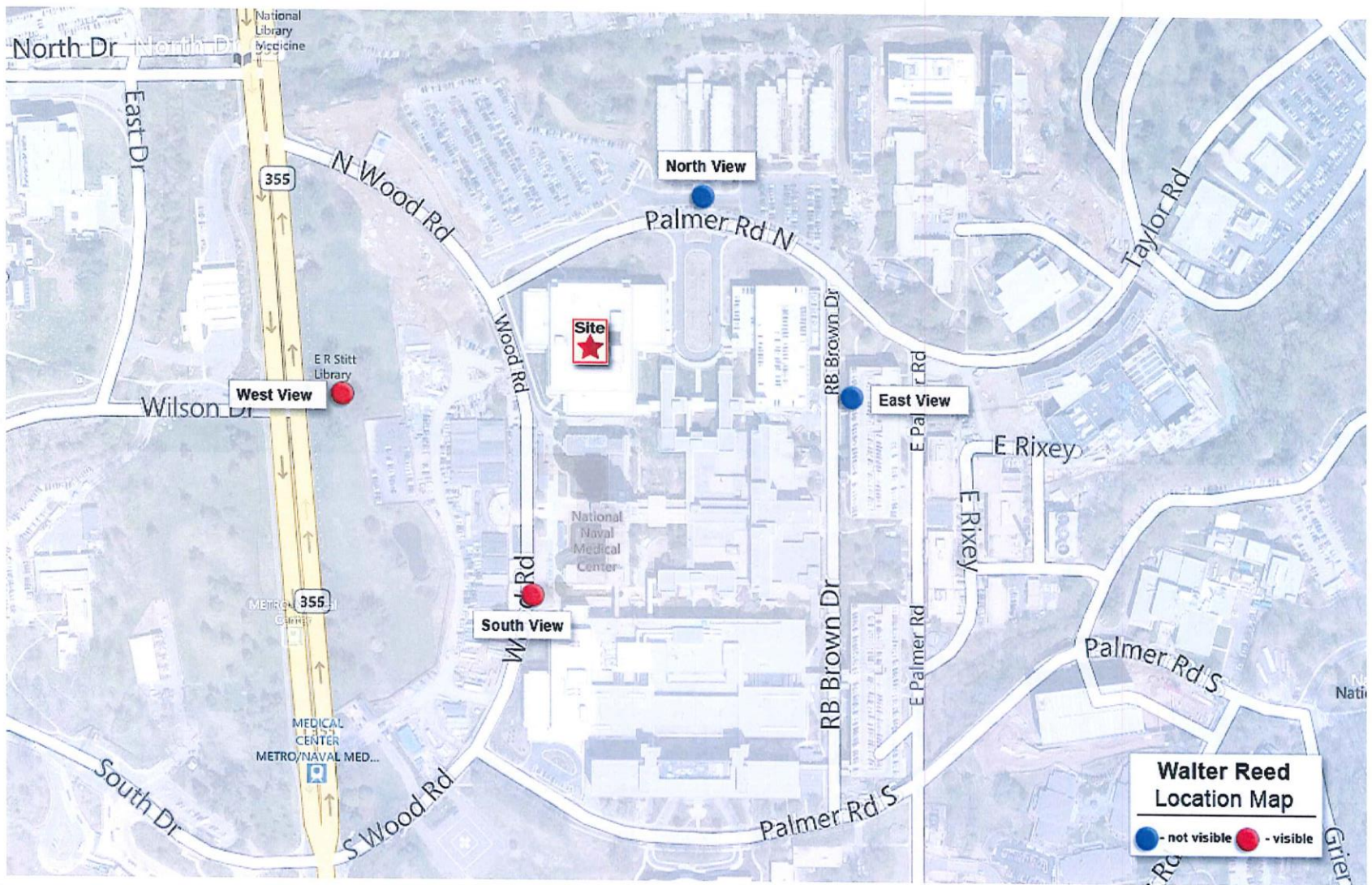
The neighborhood around the proposed Verizon facility location is described as:

To the North is the Country Day School of the Sacred Heart and residential communities.

To the West is the National Institutes of Health (NIH) campus.

To the South are residential communities.

To the East is the Uniformed Services University of the Health Sciences, and then residential communities.





**Site Name: Walter Reed**  
Wireless Communication Facility  
8901 Rockville Pike  
Bethesda, MD 20889

*Photograph Information:*  
View from the East  
**Showing the Existing Site**



**NB&C**  
**ENGINEERING**  
**SERVICES, LLC.**  
7380 COCA COLA DR. SUITE 105  
HANOVER, MD 21076



**Site Name: Walter Reed**  
Wireless Communication Facility  
8901 Rockville Pike  
Bethesda, MD 20889

*Photograph Information:*  
View from the East  
**Proposed Antennas Not Visible**

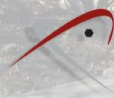


**NB&C**  
**ENGINEERING**  
**SERVICES, LLC.**  
7380 COCA COLA DR. SUITE 105  
HANOVER, MD 21076



**Site Name: Walter Reed**  
Wireless Communication Facility  
8901 Rockville Pike  
Bethesda, MD 20889

*Photograph Information:*  
View from the North  
**Showing the Existing Site**



**NB&C**  
**ENGINEERING**  
**SERVICES, LLC.**  
7380 COCA COLA DR, SUITE 106  
HANOVER, MD 21076



**Site Name: Walter Reed**  
Wireless Communication Facility  
8901 Rockville Pike  
Bethesda, MD 20889

*Photograph Information:*  
View from the North  
**Proposed Antennas Not Visible**



**NB&C**  
**ENGINEERING**  
**SERVICES, LLC.**  
7380 COCA COLA DR, SUITE 106  
HANOVER, MD 21076



**Site Name: Walter Reed**  
Wireless Communication Facility  
8901 Rockville Pike  
Bethesda, MD 20889

*Photograph Information:*  
View from the South  
**Showing the Existing Site**



**NB&C**  
**ENGINEERING**  
**SERVICES, LLC.**  
7380 COCA COLA DR, SUITE 106  
HANOVER, MD 21076



**Site Name: Walter Reed**  
Wireless Communication Facility  
8901 Rockville Pike  
Bethesda, MD 20889

*Photograph Information:*  
View from the South  
**Showing the Proposed Site**



**NB&C**  
**ENGINEERING**  
**SERVICES, LLC.**  
7380 COCA COLA DR, SUITE 106  
HANOVER, MD 21076



**Site Name: Walter Reed**  
Wireless Communication Facility  
8901 Rockville Pike  
Bethesda, MD 20889

*Photograph Information:*  
View from the West  
**Showing the Existing Site**



**NB&C**  
**ENGINEERING**  
**SERVICES, LLC.**  
7380 COCA COLA DR. SUITE 106  
HANOVER, MD 21076



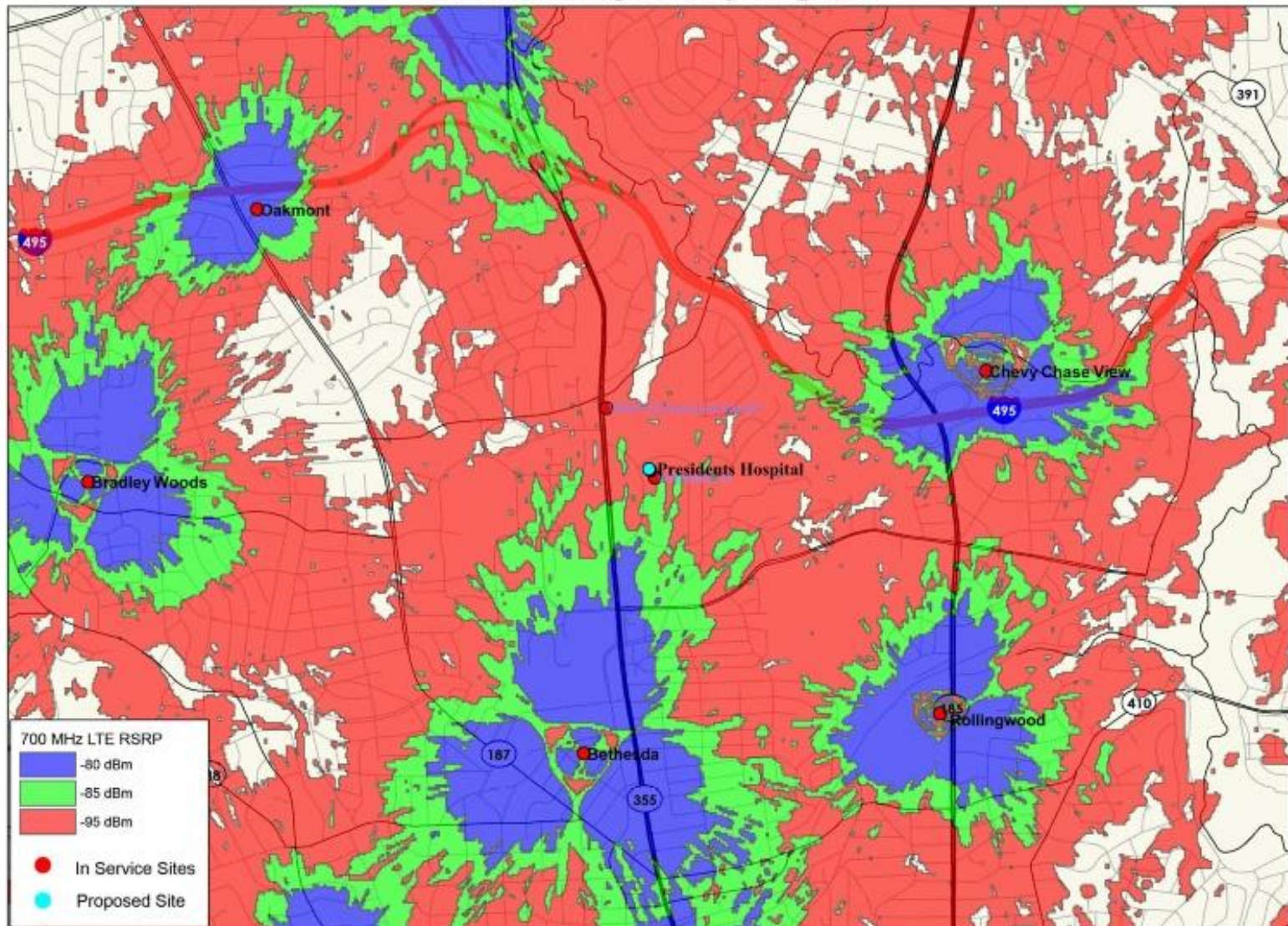
**Site Name: Walter Reed**  
Wireless Communication Facility  
8901 Rockville Pike  
Bethesda, MD 20889

*Photograph Information:*  
View from the West  
**Showing the Proposed Site**

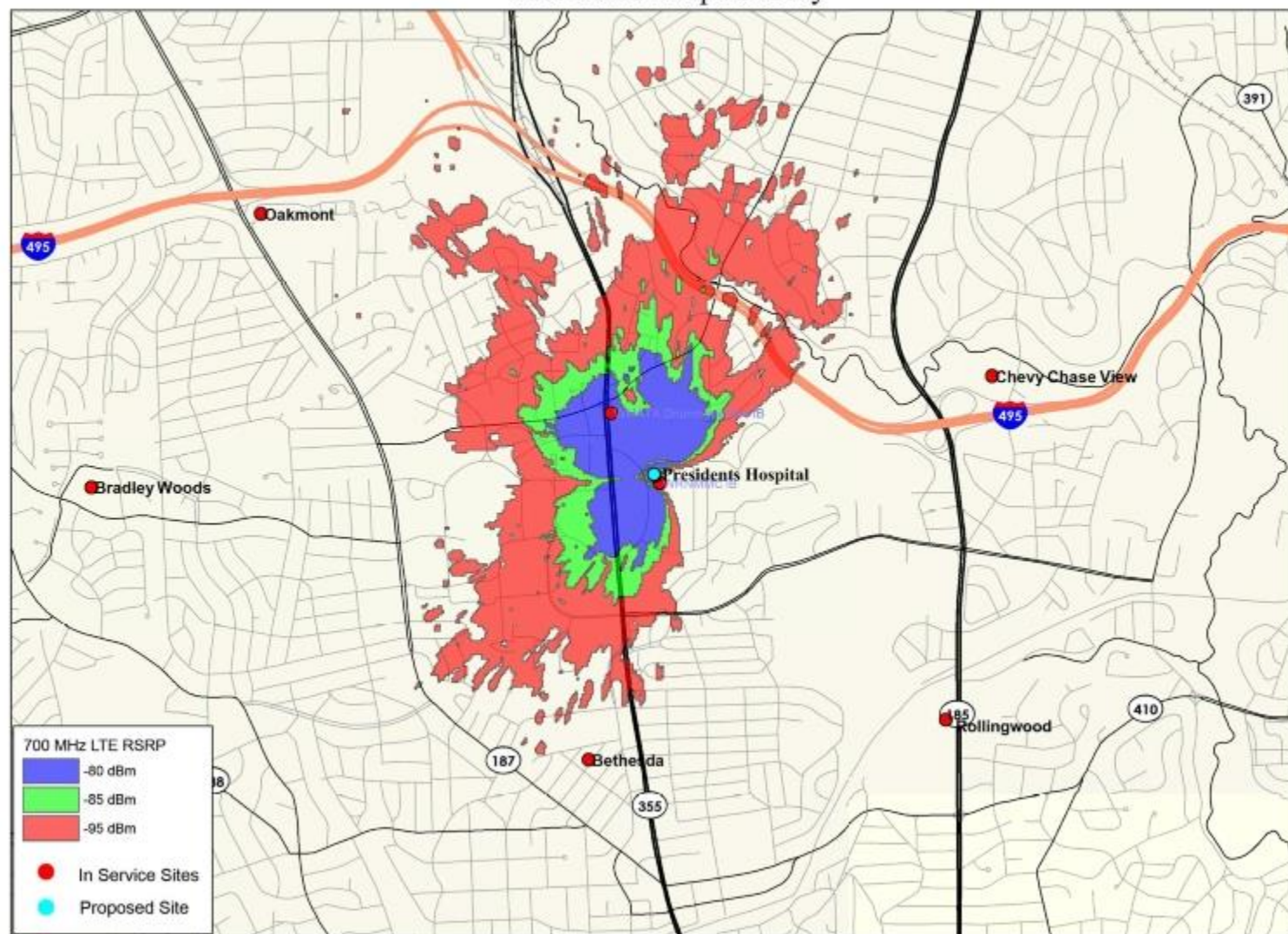


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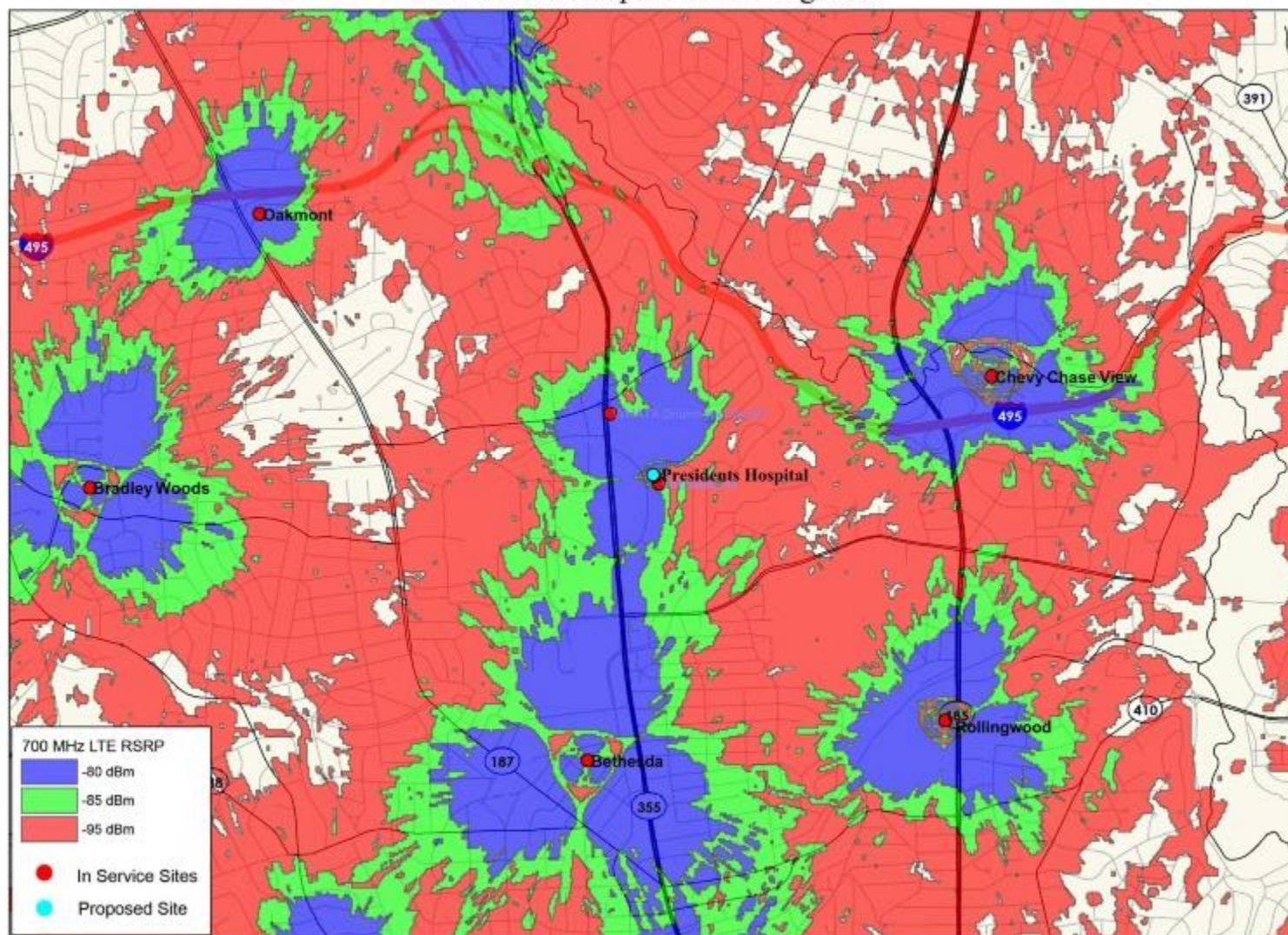
## Presidents Hospital Only Neighbors



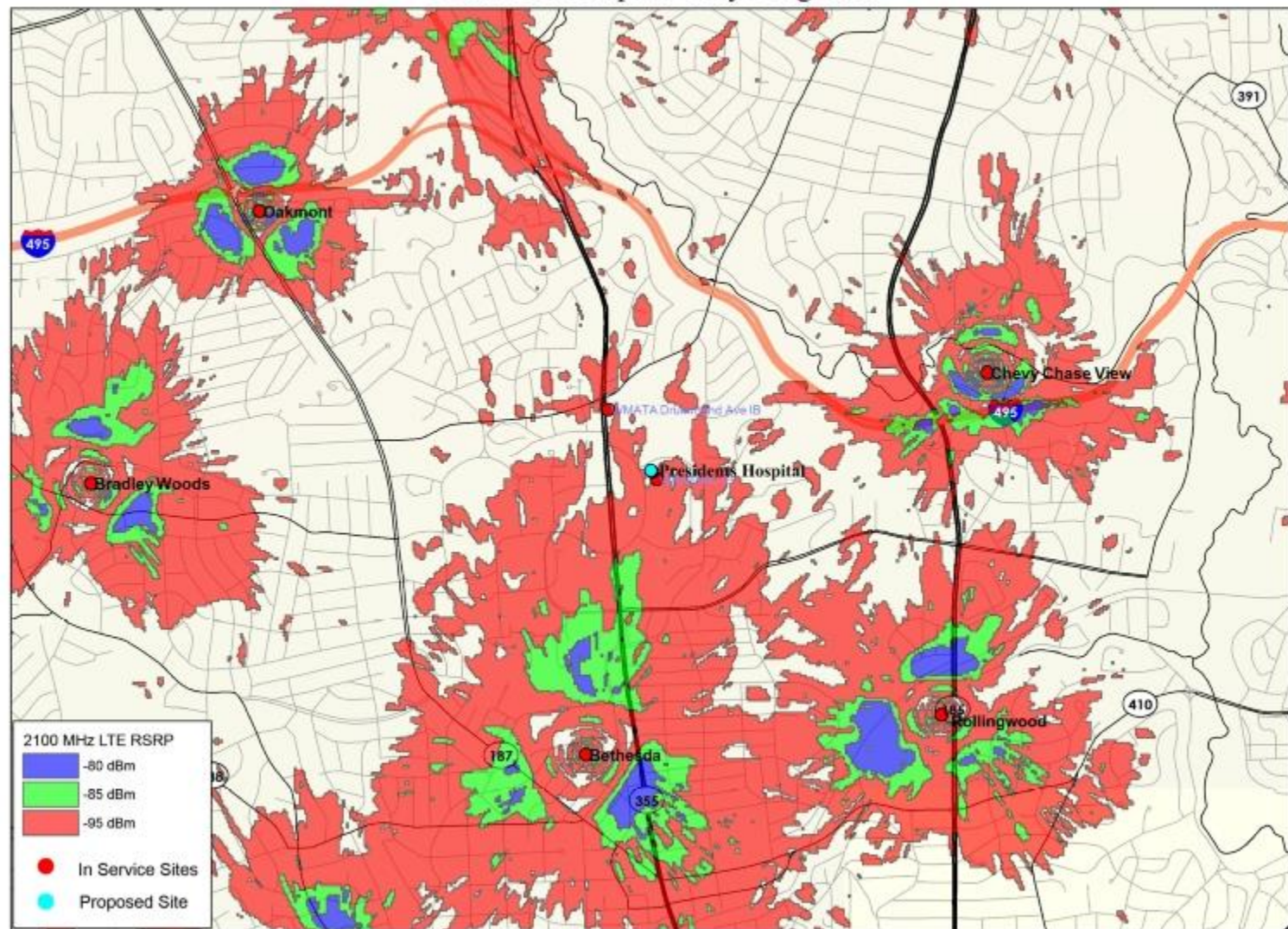
## Presidents Hospital Only



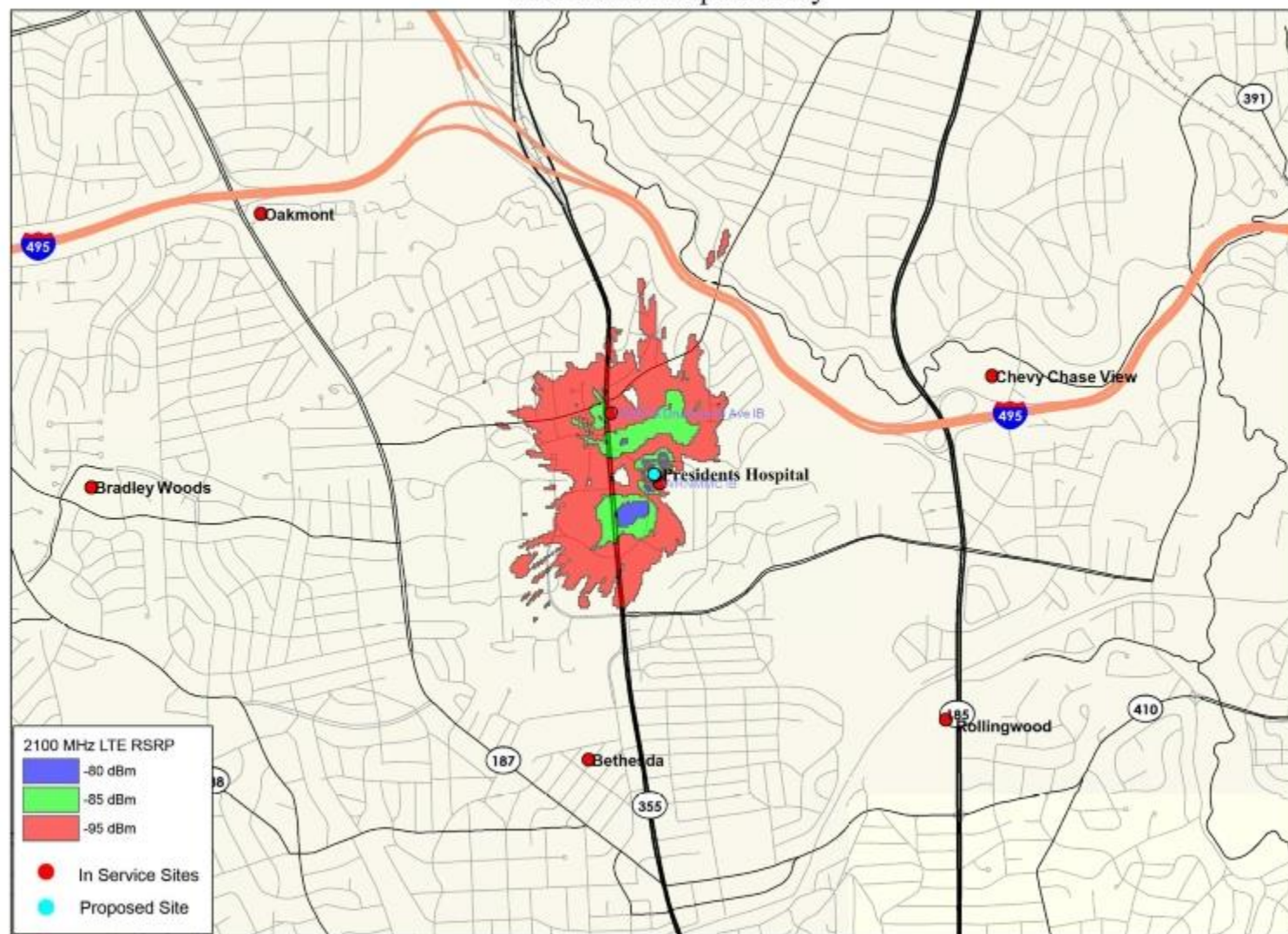
## Presidents Hospital With Neighbors



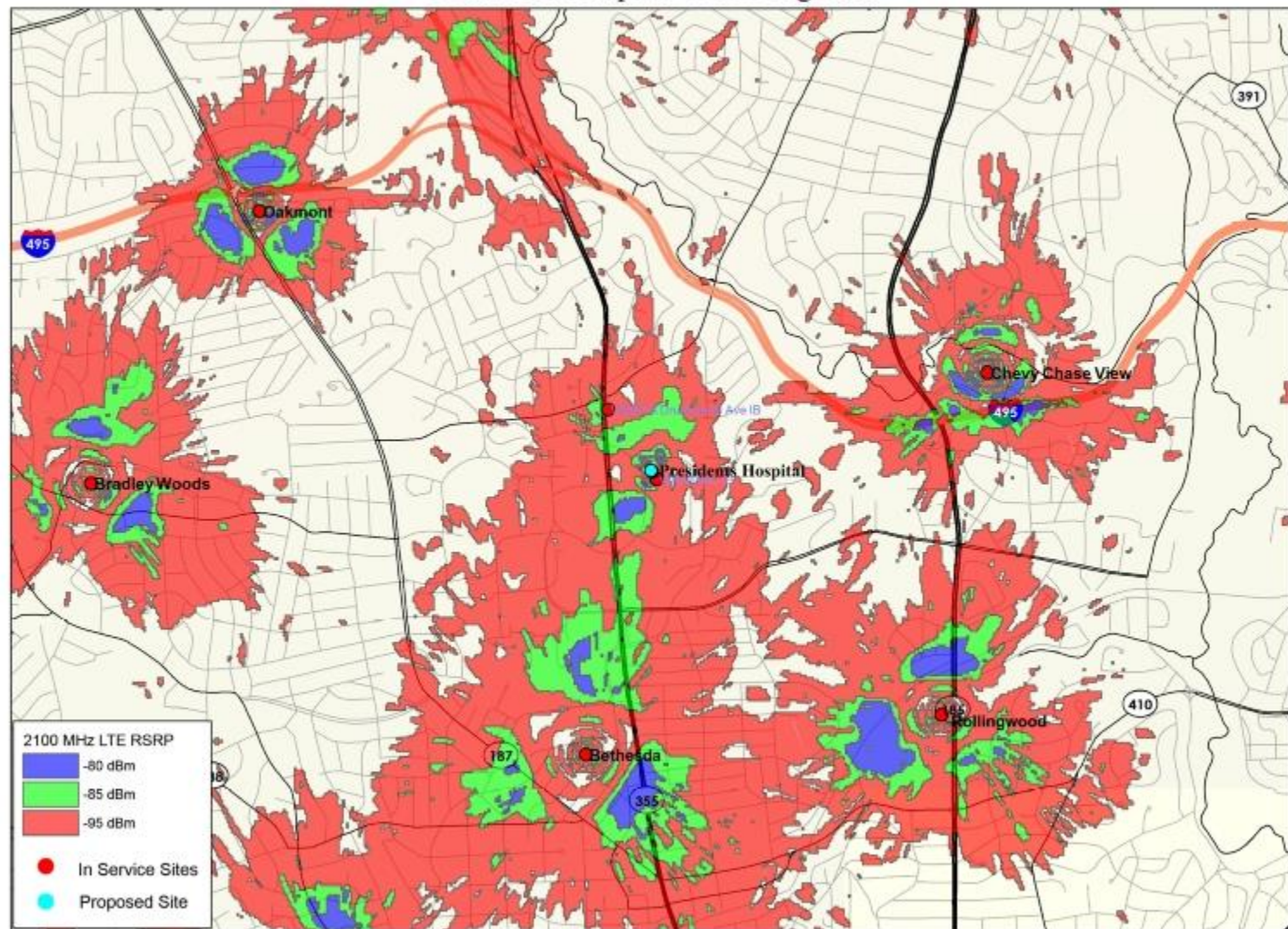
## Presidents Hospital Only Neighbors

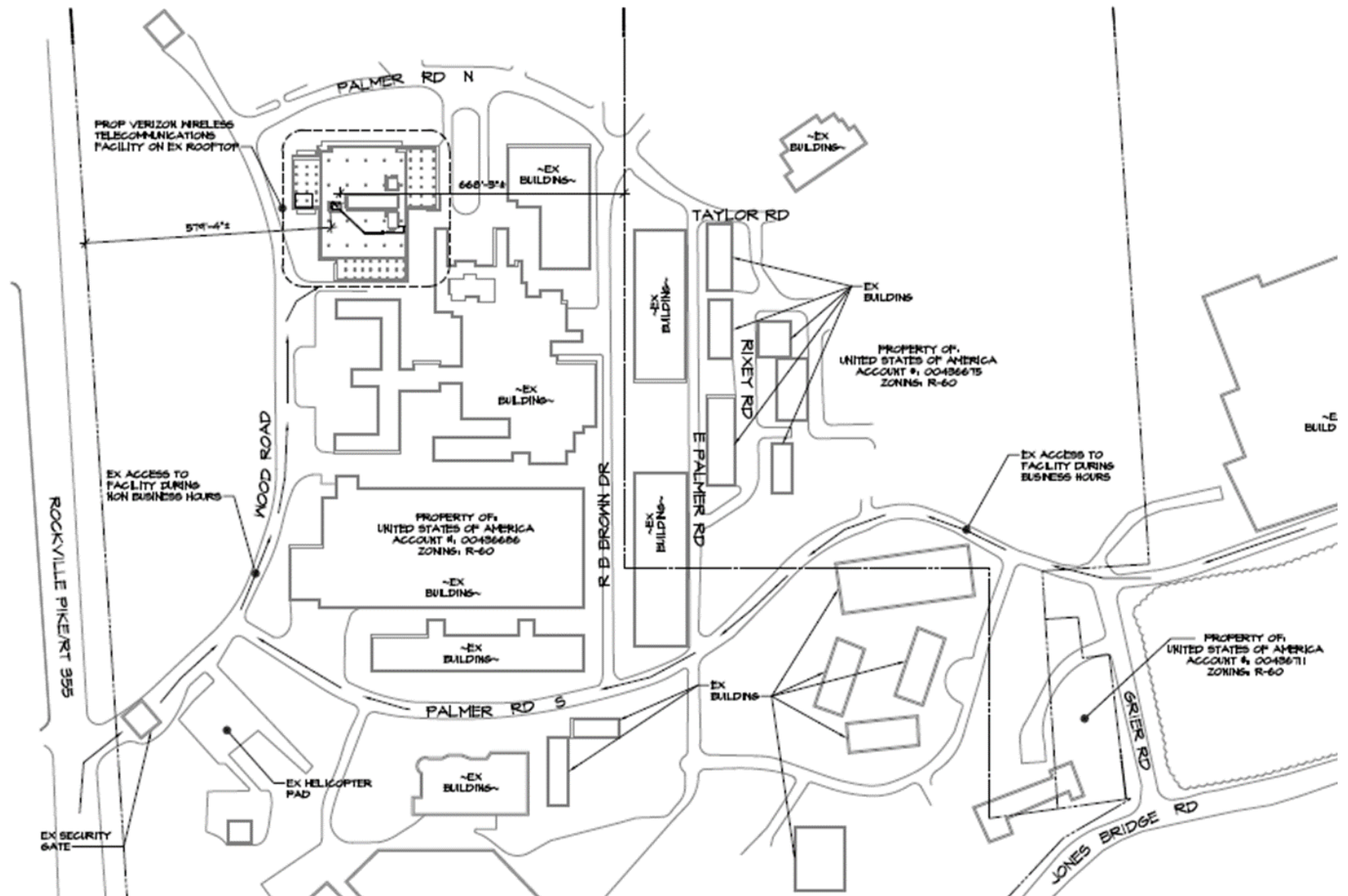


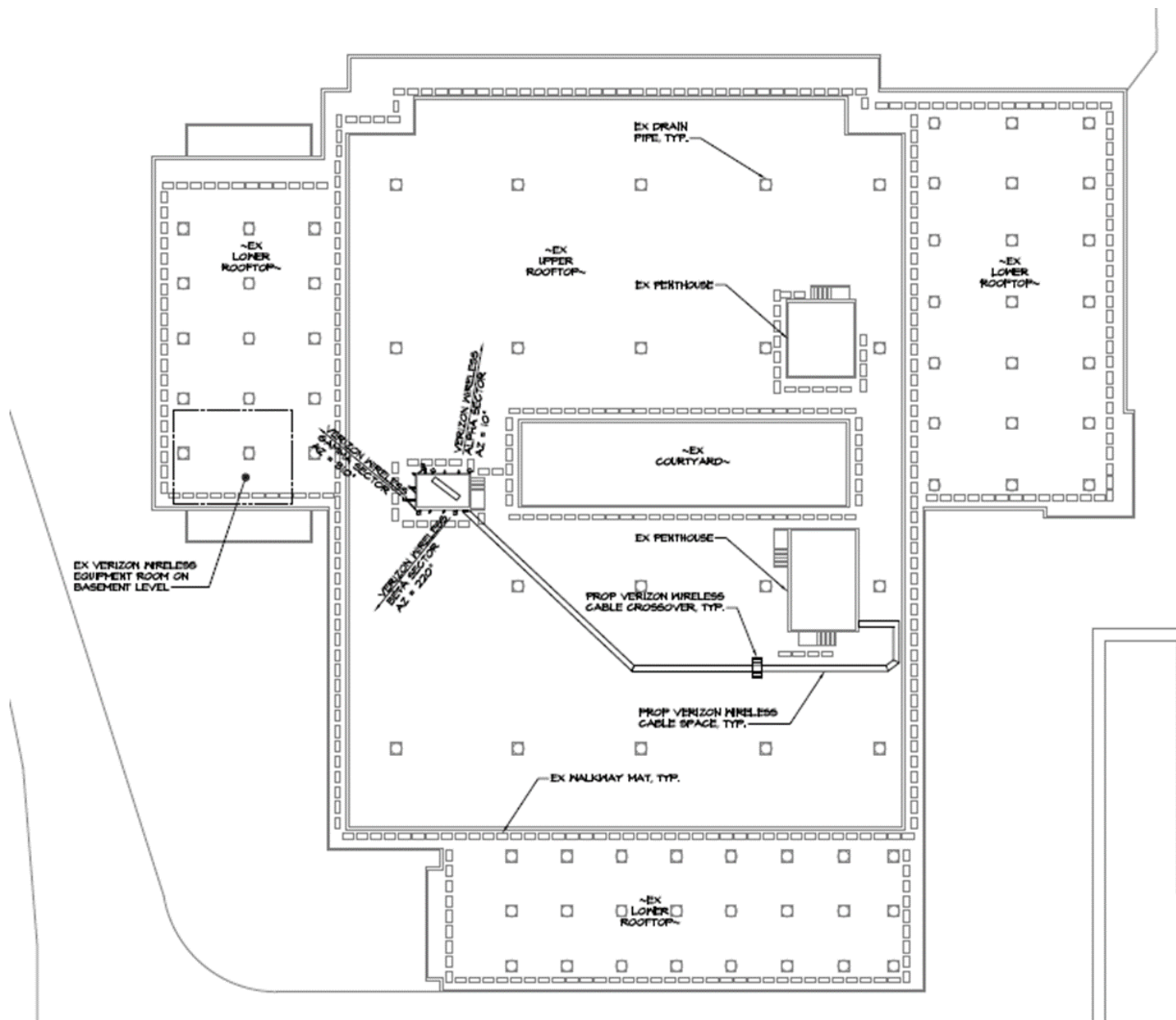
## Presidents Hospital Only

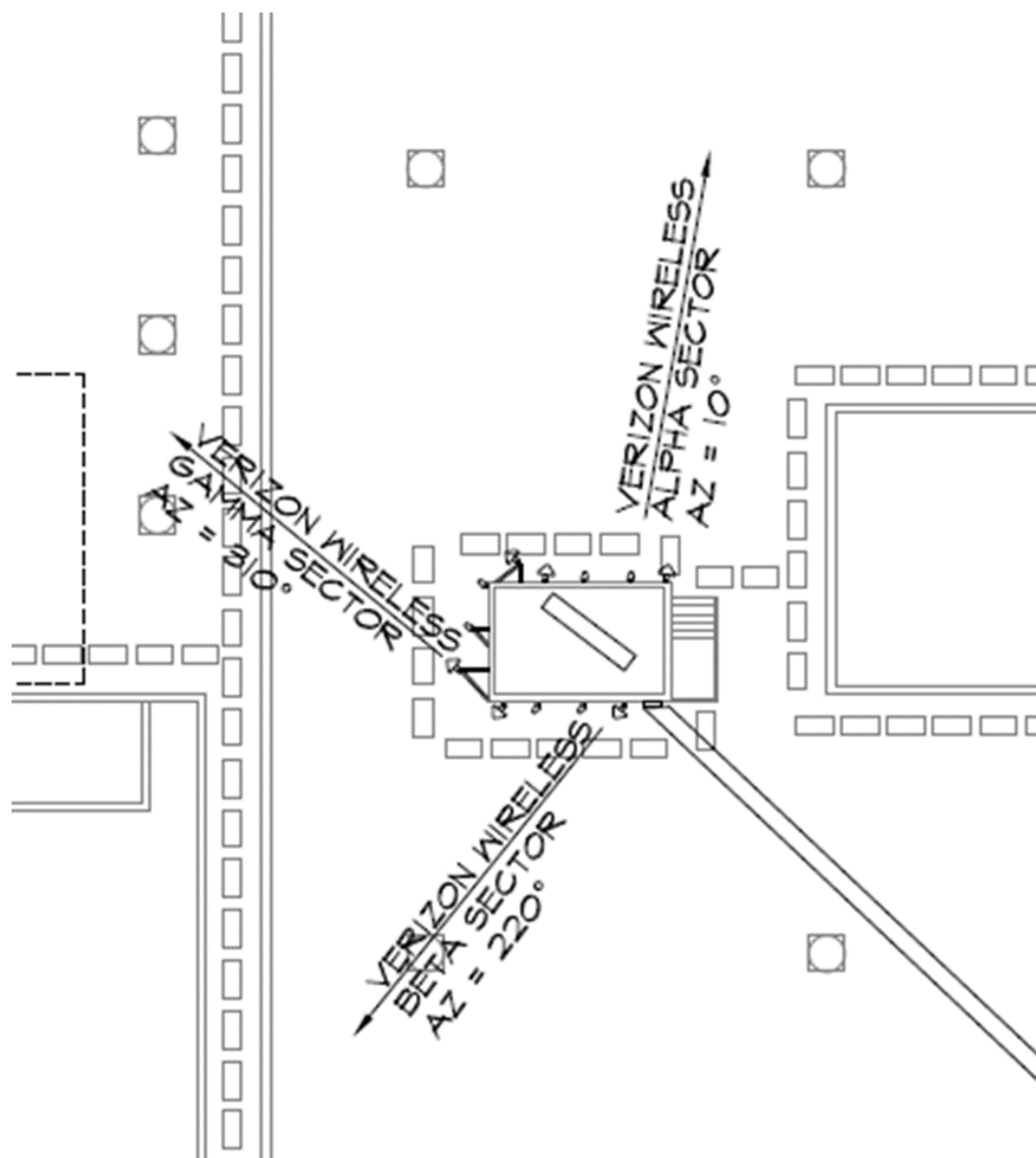


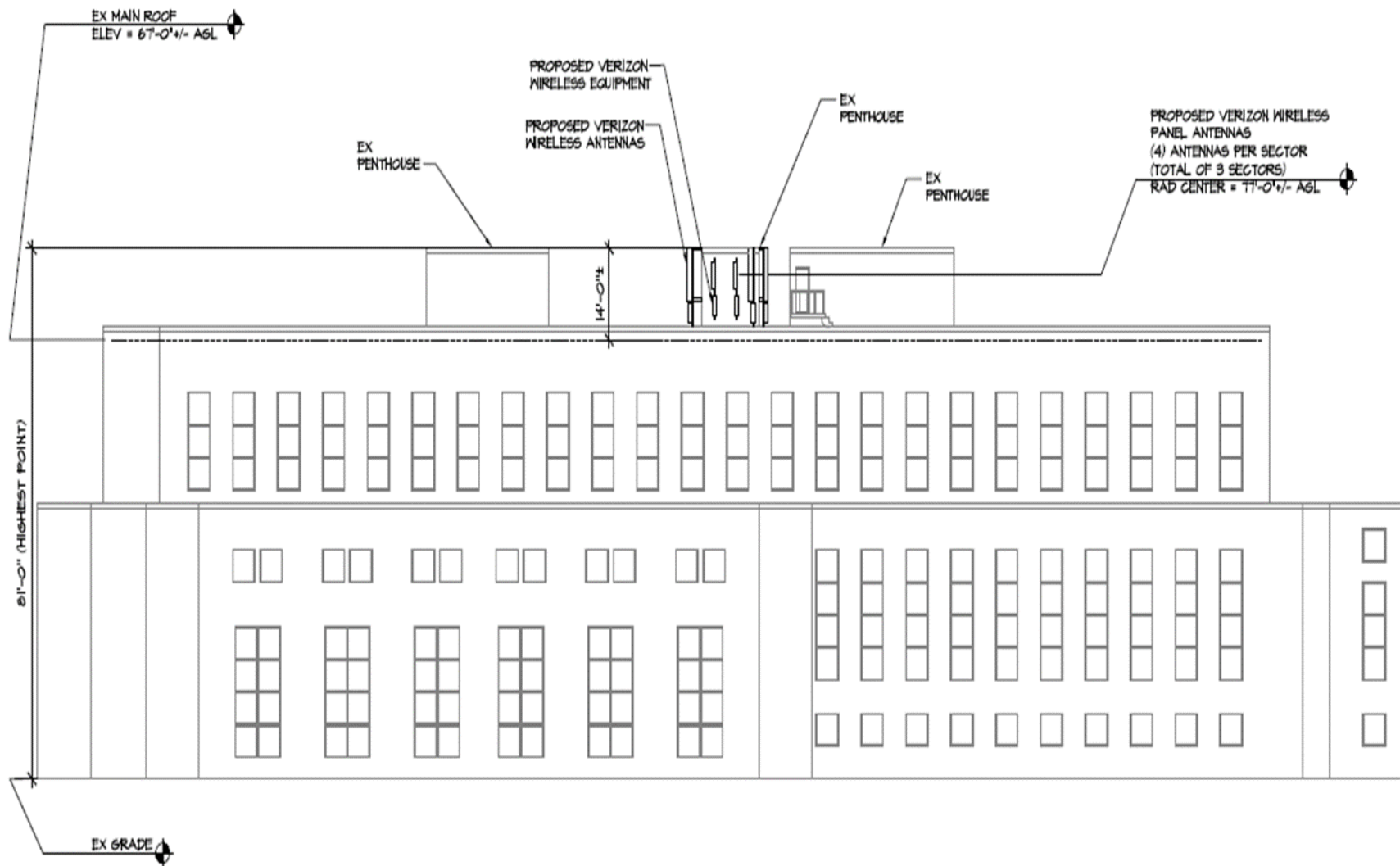
## Presidents Hospital With Neighbors











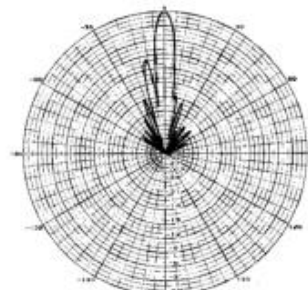
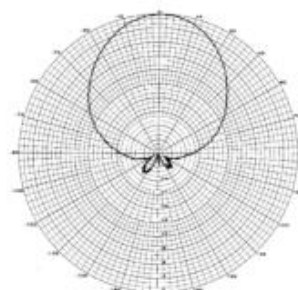
BUILDING ELEVATION

## Electrical Specifications

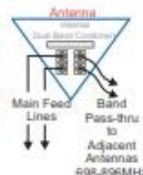
Frequency	1710-2170 MHz
Polarization	Slant +/- 45°
Gain @ 1710 MHz	18.4 dBi
Gain @ 1920 MHz	18.7 dBi
Gain @ 2170 MHz	19.0 dBi
Horizontal Beam (3dB Points)	45°
Vertical Beam (3dB Points)	7°
Elect. Downtilt Range, 2° Increments	0-6°
VSWR / Return Loss	<1.40:1 / 15.6 dB
VSWR / Return Loss w/tp	<1.50:1 / 14.0 dB
Front-to-Back at Horizon	>30 dB
Upper Side Lobe Suppression	<-18 dB
Impedance	50 Ohms
Power Input Per Connector	250 CW at 1900 MHz
Isolation	< -28 dB
Intermodulation (2x20W)	typ -150 dBc

## Mechanical Specifications

Input Connector (female)	Back 7/16 DIN or w/bo. opt.
Antenna Dimensions (LxWxD)	48.0 x 10.0 x 4.1 in. (1219 x 254 x 104mm)
*Antenna Weight	10 lbs
Bracket Weight	13.2 lbs
RF Distribution	Printed Microstrip Substrate
Radome	Ultra High-Strength Luran
Weatherability	UV Stabilized, ASTM D1925
Radome Water Absorption	ASTM D570, 0.45%
Environmental	MIL-STD-810E
Wind Survival	150 mph
Front Wind Load @100mph	63.5 lbf
Equivalent Flat Plate @100mph	1.35 sq-ft. (c=2)
Mounting Brackets	Fits 3.5 Inch Max. O.D. Pipe
Mechanical Downtilt Range	0-12°
Clamps/Bolts	Galvanized Steel/Stainless Steel



Available with  
Integrated Diplexers to  
reduce mainline cables  
and eliminate separate  
external devices



Integrated Pass-Thru Diplexers will work with TMA's

Recommended Connector Coupling Torque  
7/16 DIN: 220-265 lbf-in (25-30 N-m)

## Ordering Information & Options

AXP19-45-x  
AXP19-45-xip  
AXP19-45-x-bot

"x" is a placeholder for the built-in fixed electrical downtilt in degrees, set to 0, 2, 4 or 6  
"ip" option includes pass-thru integrated diplexer(s) which pass DC to the diplexer port(s)  
for bottom mounted connectors, add "-bot" (otherwise antenna comes standard with back mounted connectors)

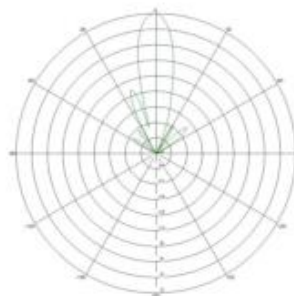
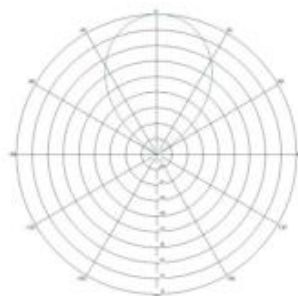
\*Antenna Weight may vary slightly with options.

### Electrical Specifications

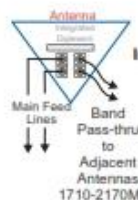
Frequency	698-896 MHz
Polarization	Slant +/- 45
Gain @ 698 MHz	17.7 dBi
Gain @ 782 MHz	18.2 dBi
Gain @ 896 MHz	18.8 dBi
Horizontal Beam (3dB Points)	40°
Vertical Beam (3dB Points)	11°
Elect. Downtilt Range, 2° Increments	0-10°
VSWR (0° ET) / Return Loss	<1.45:1 / 14.7 dB
VSWR (2, 4 & 6° ET)	<1.40:1 / 15.6 dB
VSWR / Return Loss w/tp	<1.50:1 / 14.0 dB
Front-to-Back at Horizon	>30 dB
Upper Side Lobe Suppression	<-18 dB
Impedance	50 Ohms
Power Input Per Connector	500 CW at 800 MHz
Isolation	<-28 dB
Intermodulation (2x20W)	<-150 dBc

### Mechanical Specifications

Input Connector (female)	Back 7/16 DIN or w/ bot. opt.
Antenna Dimensions (LxWxD)	72.0 x 18.8 x 9.1 in. (1829 x 478 x 231mm)
*Antenna Weight	28 lbs
Bracket Weight	13.2 lbs
RF Distribution	Printed Microstrip Substrate
Radome	Ultra High-Strength Luran
Weatherability	UV Stabilized, ASTM D1925
Radome Water Absorption	ASTM D570, 0.45%
Environmental	MIL-STD-810E
Wind Survival	120 mph
Front Wind Load @100mph	234 lbf
Equivalent Flat Plate @100mph	4.8 sq-ft. (c=2)
Mounting Brackets	Fits 3.5 Inch Max. O.D. Pipe
Mechanical Downtilt Range	0-12°
Clamps/Bolts	Galvanized Steel/Stainless Steel



Available with  
Integrated Pass-Thru Diplexers  
to reduce mainline cables  
and eliminate separate  
external devices



Integrated Pass-Thru Diplexers will work with TMA's

Recommended Connector Coupling Torque  
7/16 DIN: 220-265 lbf-in (25-30 N-m)

### Ordering Information & Options

X7C-FRO-640-x	"x" is a placeholder for the built-in fixed electrical downtilt in degrees, set to 0, 2, 4, 6, 8 or 10
X7C-FRO-640-xip	"ip" option includes pass-thru integrated diplexer(s) which pass DC to the diplexer port(s)
X7C-FRO-640-xip-bot	for bottom mounted connectors, add "-bot" (otherwise antenna comes standard with back mounted connectors)

\*Antenna Weight may vary slightly with options.